

AMENDMENTS TO THE SPECIFICATION

Rewrite the paragraph beginning on Page 3, Line 3 as follows:

Furthermore, when multiple dies are used to concurrently form parts in a single hydroforming operation, there is need to open the dies, to remove formed workpieces and to insert in the die cavities workpieces to be formed subsequently. Although Although a ram can assist an operator to open one die cavity, other die cavities not in direct contact with the ram cannot be opened by the ram. This deficiency increases process time and slows the production rate. It is preferable that each die cavity be opened and closed in a process coordinated with movement of the ram.

Rewrite the paragraph beginning on Page 5, Line 7 as follows:

Referring now to the drawings, there is illustrated in Figure 1 an apparatus, indicated generally at 10, for performing a hydroforming process in accordance with this invention. The apparatus 10 includes a frame 12 that is sized to support hydroforming dies arranged in a vertically oriented relationship, two of which are indicated generally at 14, 16. Although this invention will be described and illustrated in the context of the two vertically stacked hydroforming dies 14 and 16, it will be appreciated that this invention can be practiced with a greater number of such hydroforming dies if desired. Furthermore, the hydroforming dies can be arranged arranged within the hydroforming apparatus 10 in any desired direction other than the illustrated vertical direction. For example, the dies may be stacked horizontally, in which case the lateral plane of the dies is vertical, and the direction of their movement is horizontal.

Rewrite the paragraph beginning on Page 7, Line 8 as follows:

During series production of parts using the hydroforming apparatus 10, an operational cycle begins with the various components arranged in the die closed position of Figure 3A, in which the die cavities 21, 25 are occupied with parts formed during the prior cycle. Die cavity 21 is opened when ram 32 moves upward due to

actuation by its cylinder 30. Platen 34 moves upward with the ram, and the heads 56, 58 of guide pins 40, 42 engage the lower surface of platen 38, as Figure 3B shows. This upward displacement of ram 32 fully opens die 14 without opening the second die 16. Then, ram 32 moves upward again due to actuation by its cylinder, platen 32 moves upward with the ram, and platen 38 moves upward with the ram due to contact of the heads 56, 58 on the lower surface of platen 38, thereby opening die cavity 25, as Figure 3C shows. Preferably the length of the shank portions 48, 50 of the guide pins 40, 42 is a predetermined length that enables die cavity 21 to be opened sufficiently to remove formed parts from the die and to insert workpieces in the die readily within the available extent of travel of the ram 32.

Rewrite the paragraph beginning on Page 8, Line 1 as follows:

Figures 4A-4C illustrate another embodiment in which a linear actuator 70 is secured to the first platen 34 and intermediate platen 38. Actuator 70 is secured to platen 38 by bolts and is also secured to platen 34 so that forces, directed upward and downward and produced by ram 32 and actuator 70, are transmitted to plates 34, 38. The actuator 70 may be hydraulically, pneumatically or electrically actuated. A hydraulic linear actuator is generally in the form of a double acting piston movable within a hydraulic cylinder. Pressurized fluid is applied within the cylinder alternately to opposite sides of the piston depending on the direction the piston is to be moved relative to the cylinder. The piston is displaced, and the actuator transmits a force to the components to which the cylinder and piston are secured.

Rewrite the paragraph beginning on Page 11, Line 22 as follows:

In the next step of the hydroforming method, the pressure of the fluid within the workpieces 26 and 28 is increased to such a magnitude that the workpiece 26 expands outward into engagement with the surface of the recesses 18a and 20a formed in the first and second die sections 18 and 20 of the first die 16, and the second workpiece 28 is expanded outwardly into engagement with the surface of the recesses 22a and 24a formed in the first and second die sections 22 and 24 of the second die 18.

Such expansion causes the workpieces 26 and 28 to conform to the contour of the surfaces of die cavities 21 and 25, respectively.